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Eui-Sun Hong

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EXAMINER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/743,866
Filing Date: December 24, 2003
Appellant(s): HONG ET AL.

Ralph T. Webb
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed May 17, 2010 appealing from the Office action mailed November 18, 2010.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,976,729	Morishita et al.	11-1999
2004/0058234	Slezak	3-2005
2002/0142211	Nakanishi et al.	10-2002

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JP 60-124351	Seiji	03-1985
EP 0 899 799 A2	Shibata	03-1999

Copper and Alloys [online]. H. Cross Company, [retrieved on 2007-4-2]. Retrieved from the internet: <URL: <http://hcrosscompany.com/metals/copper.htm>>.

Periodic Table: Copper [online]. Chemical Elements.com [retrieved on 2007-4-2]. Retrieved from the internet: <URL: www.chemicalelements.com/elements/cu.html>.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7, 10, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morishita et al. (US 5,976,729) in view of Slezak (US 2004/0058234) and Nakanishi et al. (US 2002/0142211).

Morishita et al. teach a battery cell having an outer can made from aluminum or aluminum alloy (abstract).

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Morishita et al. teach that the cell has an outer can containing an electrode assembly and electrolyte, a sealing lid, and a bottom on which a layer of nickel is provided on the outer surface of only the bottom portion of the can and not on the side wall of the can (Figure 6, column 4 lines 1-9).

The nickel layer of Morishita et al. is 0.10 mm, or 100 μm (column 5 lines 30-38).

With regard to claim 4, the layer may also comprise copper (column 3 line 20).

Claims 3 and 5 are a process-by-product claim. The product produced by the process-by-product claims 3 and 5 are the product stated in claims 2 and 4, respectively. The cited references teach a product that is the same as, or an obvious variant of, the product set forth in claims 2 and 4, respectively. Claims 3 and 5 are alternatively unpatentable. The product of claims 2 and 3, and the product of claims 4 and 5, appear to be the same. See MPEP 2113 and *In re Marosi*, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983)

As for claim 6, the bottom surface of the battery can is welded to a first lead plate and the first lead plate is welded via resistance welding to a second lead plate for connection to the battery (column 1 lines 54-61; column 2 lines 59-63).

Claim 7 is a process-by-product claim. The product produced by the process-by-product claim 7 is the product stated in claim 6. The cited references teach a product that is the same as, or an obvious variant of, the product set forth in claim 7. Claim is alternatively unpatentable. The product of claim 6 and the product of claim 7 appear to be the same. See MPEP 2113 and *In re Marosi*, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983)

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With regard to claim 10, Morishita et al. disclose a reliable protective circuit or safety device having leads connecting the battery and the associated protective circuit or safety device (column 1 lines 54-61; column 2 lines 59-63).

Morishita et al. fail to teach that the nickel layer is a surface coating.

Slezak teaches a nickel plating layer on the outside surface of a battery can ([0106]).

One of ordinary skill in the art could have substituted the nickel plating layer of Slezak for the welded nickel layer of Morishita et al. and the results of the substitution would have been predictable. MPEP 2141 III.

Morishita et al. in view of Slezak fail to teach that the sealing lid is welded to the can.

Nakanishi et al. teach a secondary wound battery having an end cap attached to the can by welding ([0012], [0142]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to attach the cap of Morishita et al. in view of Slezak by welding such as taught by Nakanishi et al. since welding would ensure that the electrode assembly and electrolyte solution were sealed within the battery can, preventing leakage and allowing for electricity generation.

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3. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morishita et al. in view of Slezak and Nakanishi et al. as applied to claim 6 above, and further in view of Seiji (Japan 60 124351). Additionally, datasheets for copper and copper alloys have been cited as evidence as discussed below.

The teachings of Morishita et al., Slezak and Nakanishi et al. as discussed above are incorporated herein.

Morishita et al. in view of Slezak and Nakanishi et al. do not teach an outside layer comprised of a first material and a lead connected thereto comprised of a second material having a melting point different from the layer material by 500 °C or 200°C or less. Morishita et al. in view of Slezak disclose that a two-layer lead in the form of nickel plating is attached to the bottom surface of the battery.

The first layer of the lead is aluminum or an aluminum alloy and the second layer being nickel or a nickel-plated iron, nickel-plated stainless, or nickel-platted copper (col. 2 lines 33-36; col. 3 lines 18-20).

Morishita et al. in view of Slezak and Nakanishi et al. do not explicitly teach that the melting point of the materials differ by 500°C or less or that they differ by 200°C or less.

Seiji teaches a nonaqueous electrolyte cell having a copper layer on the outside surface of the positive electrode enclosure or can (See abstract). Seiji teaches that the use of nickel or copper on the outside surface of the terminal face reduces the contact resistance.

A lead constructed of a copper-nickel alloy has a melting point of 1170 °C (Copper & Alloys datasheet, page 3). The copper outside layer of the battery can has a melting point of 1083 (chemical Elements Basic Information-Copper). Therefore, the melting point of the battery can outside layer and the lead material differ by 200 °C or less.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the battery can outside layer of Morishita et al. in view of Slezak and Nakanishi et al. to use copper in the construction of the battery can as taught by Seiji to reduce the contact resistance. The melting point of copper differs by 500 °C, 200 °C, or less from the melting point of the lead construction material, a copper-nickel alloy taught by Morishita et al. The proper selection of the construction materials in contact in the battery eliminates the adverse effects such as corrosion that result from joining dissimilar metals.

4. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morishita et al. in view of Slezak and Nakanishi et al. as applied to claim 1 above, and further in view of Shibata et al. (EP 0 899 799 A2).

The disclosures of Morishita et al., Slezak and Nakanishi et al. as discussed above are incorporated herein.

Morishita et al. in view of Slezak and Nakanishi et al. do not teach a metal layer between the layer and the outer surface of the can having a first material selected from Zn, Sn, Fe, and Cr.

Shibata discloses a jar can for a secondary battery. The bottom surface of the battery can consist of multiple layers. Layer 1 is the aluminum or aluminum alloy of the battery can bottom surface. Layer 2 is the layer adjacent to the exterior to the bottom of the can and is constructed of iron or a ferrous alloy. Layer 3 is the layer adjacent to the exterior surface of the iron layer and it is constructed of nickel (paragraphs 18- 23). The iron layer maintains the stiffness or structural strength of the can and the use of aluminum reduces the weight of the battery can (paragraphs 19-21).

The reference does not explicitly state that the material in layer 1 is the same as the material in layer 3. The aluminum alloy of layer 1 may contain nickel as a common material.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Morishita et al. in view of Slezak and Nakanishi et al. to include iron as an internal layer of the bottom of the battery can to ensure the structural strength of the can is maintained as taught by Shibata et al.

(10) Response to Argument

Appellant's arguments in the Appeal Brief filed May 17, 2010 have been considered but not found to be convincing. The arguments will be addressed in the order in which they appear in the Appeal Brief.

Appellants begin, on page 5, by discussing the nickel layer of Morishita et al. The examiner agrees that Morishita et al. teach a nickel surface layer attached by welding to the bottom of a battery can.

In the first full paragraph of page 6, Appellant states that, based on the instant specification ([0007], [0008]), the bottom welded plate of Morishita et al. “*may* introduce additional problems ...” (emphasis added by examiner). The examiner notes that the additional problems purported by Appellant are not definite, but only possible.

Appellant, in the next paragraph, states that the instant invention overcomes these possible problems by attaching the layer on the bottom portion of the battery can by other methods than welding, such as coating.

In the final paragraph of page 6, Appellant argues that the nickel layer of Morishita et al., which in the above rejection is used to meet the limitation to the layer on the bottom portion of the can as found in instantly filed claim 1, is not 30 μm to 100 μm . The examiner disagrees with Appellant's arguments.

Appellant argues that the surface layer of Morishita et al. is a double layer, including an inner layer and an outer layer. The outer layer, which is nickel, is taught to be 100 μm while the inner layer is taught to be 50 μm , making the total layer 150 μm . According to Appellant, this 150 μm layer is greater than the 30 μm to 100 μm layer “surface coating” of claim 1.

The examiner finds that Appellant is interpreting the limitation too narrowly. The limitation is to: “a surface coating layer having a thickness of 30 μm to 100 μm ...” This

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does not mean that a total of two surface coating layers cannot be less than 30 μm or more than 100 μm . The limitation means that one surface layer has a thickness of 30 μm to 100 μm . Further, the claim does not limit the can to having only one surface layer. Therefore, the nickel layer of Morishita et al. meets the limitation of claim 1 to the thickness of the surface layer.

Next, in the first and second full paragraphs of page 7, Appellant begins to discuss the Slezak reference.

Slezak is used to show that it would have been obvious to the skilled artisan at the time the invention was made to make the welded nickel layer of Morshita et al. a surface coating layer. The teachings of Slezak that are relied upon are the teachings of plating a nickel layer onto the outside surface of a battery can ([0106]).

Appellant is of the position that it would not have been obvious, in light of the teachings of Slezak, to plate a nickel layer onto the outer surface of an aluminum battery can, since Slezak does not teach plating of nickel onto aluminum but onto stainless steel.

The examiner finds that Appellant is not arguing in response to the rejection as it has been made, see above. The examiner finds that the teachings of Slezak of plating of nickel onto the outer surface of a battery can would have made it obvious to the skilled artisan to plate the nickel layer, instead of welding the nickel layer, to the outer surface of the battery can of Morishita et al. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of

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references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

As to Appellant's arguments that Slezak teaches plating the entire surface of the can, and not only the bottom portion of the can, again the Appellant is attacking the references individually. As is discussed above, the teachings of Morishita et al. show that it is known in the art to apply a nickel layer only to the bottom portion of the can, and not on all outside portions of the can. The teachings of Slezak that are relied upon above are simply the method by which the layer is attached to the can, not where the layer is attached.

In the paragraph spanning pages 7 and 8, Appellant argues that it would not have been obvious to the skilled artisan to use plating instead of welding to attach the nickel layer to the can of Morishita et al. "in view of the known difficulties in attaching nickel to aluminum by methods such as resistance welding or ultrasonic welding" (page 8 lines 1-3). The examiner finds this argument to be unconvincing.

First, Appellant has not established that it is known that it is difficult to attach nickel to aluminum. Merely, Appellant has shown that there *may* be problems using welding as a technique to attach nickel to aluminum.

Second, the examiner finds that it would be obvious to the skilled artisan to plate nickel onto a metal substrate, such as a battery can, in light of the teachings of Slezak. A skilled artisan, reading Slezak, would not find that the only teachings of Slezak are to plate nickel on all outer surfaces of a stainless steel battery can. Slezak reasonably

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teaches to an artisan having skill in the battery art that it is known to plate nickel onto a battery can. In light of these teachings, the skilled artisan would recognize that, in addition to welding, it is known to plate a layer onto the outer surface of a battery can.

As to Appellant's arguments, on page 8, to Nakanishi et al., the arguments directed to the thickness of the surface layer are addressed above. Appellant does not appear to argue the teachings of Nakanishi et al. to welding an end cap to a battery by welding.

On page 9, in reference to claims 6, 7, and 10, Appellant argues that Slezak do not teach that a lead can be attached to an aluminum battery can having a nickel surface layer. The examiner finds that the skilled artisan, in light of the teachings of Morishita et al. to attach a lead to a nickel layer (column 1 lines 54-61; column 2 lines 59-63), would find that a lead plate could also be attached to a plated nickel layer. As the skilled artisan will easily recognize, once the layer is attached to the can, it will function in the same manner no matter what method was used to attach it. In other words, Appellant has not established that the skilled artisan would find that a plated nickel layer would function differently than the welding nickel layer of Morishita et al. when it comes to attaching a lead plate to the layer.

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With regard to Appellant's arguments on pages 9 and 10 in reference to claims 8, 9, 13 and 15, the examiner finds that the arguments to the thickness of the nickel layer have been addressed above.

In conclusion, Appellant has provided to basic arguments: first, that Morishita et al. does not teach the claimed thickness for the layer on the bottom of the can, and second, that it would not have been obvious in light of Slezak to plate instead of weld the layer of Morishita et al. to the can. In response to the first argument, the examiner finds that Morishita et al. in view of Slezak teach a surface layer having a thickness of 30 μm to 100 μm . As to the second argument, the examiner finds that it would have been obvious to the skilled artisan that Slezak teaches a method of attaching a nickel layer to a battery can by plating, and that it would have been within the ordinary level of skill in the art to attach the nickel layer to the battery can of Morishita et al. by plating in light of the teachings of Slezak.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Alix Echelmeyer/

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